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<b>Notice of Allowability</b>	Application No.	Applicant(s)	
	09/667,966	CHEN, ZEWU	
	Examiner	Art Unit	
	Therese Barber	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTO-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 11 September 2003.
  2.  The allowed claim(s) is/are 1,3-6,8-18,21,22,24 and 41-64.
  3.  The drawings filed on 22 September 2002 and 06 February 2003 are accepted by the Examiner.
  4.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a)  All
    - b)  Some\*
    - c)  None
 of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_\_.
5.  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
    - (a)  The translation of the foreign language provisional application has been received.
  6.  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8.  CORRECTED DRAWINGS must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No. \_\_\_\_\_.
  - (b)  including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.
  - (c)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet.

9.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

#### Attachment(s)

- |  |   |
|--|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                             | 2 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)          |
| 3 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                    | 4 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____.            |
| 5 <input type="checkbox"/> Information Disclosure Statements (PTO-1449), Paper No. _____.              | 6 <input type="checkbox"/> Examiner's Amendment/Comment                             |
| 7 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
|  | 9 <input type="checkbox"/> Other  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's remarks filed on 11 September 2003 regarding the objections to figures 8-10 has been overcome by the amendment to the specification.

### ***Allowable Subject Matter***

2. Claims 1, 3-6, 8-18, 21,22, 24, 41-64 are allowed.
3. Regarding claims 1, 3-6, 8-13, and 49, the examiner agrees with the applicant's arguments on pages 11-16, dated 11 September 2003, regarding the 103 rejections based on the combination of the Wittry and Ohsugi patents. Claims 1, 3-6, 8-13, and 49 are allowable because the prior art of record fails to teach or to reasonably suggest a total reflection x-ray fluorescence apparatus having a doubly curved x-ray optic for diffracting and focusing x-rays, in order to detect x-ray fluorescence that is emitted by foreign matter that is present on a surface, as set forth in the claimed combination.
4. Regarding claims 14-17 and 57, the claims are allowable because the prior art fails to teach or to reasonably suggest a total reflection x-ray fluorescence apparatus having a doubly-curved x-ray optic for diffracting and focusing x-rays wherein the locations of the doubly-curved x-ray optic, x-ray source, and point of impingement define an optical circle of radius R, wherein the doubly-curved x-ray optic has an optical surface of radius 2R and one or more atomic planes

are essentially parallel with the optic surface, in order to detect x-ray fluorescence that is emitted by foreign matter that is present on a surface, as set forth in the claimed combination.

5. Regarding claims 18, 21, 22, 24, and 50, the examiner agrees with the applicant's arguments on pages 11-16, dated 11 September 2003, regarding the 103 rejections based on the combination of the Wittry and Ohsugi patents. Claims 18, 21, 22, 24, and 50 are allowable because the prior art of record fails to teach or to reasonably suggest the combination of steps of detecting foreign matter on a surface by utilizing a total reflection x-ray fluorescence apparatus that has a doubly curved x-ray optic for diffracting and focusing x-rays, as set forth in the claimed combination.

6. Regarding claims 41-48 and 64, the claims are allowable because the prior art fails to teach or to reasonably suggest a total reflection x-ray fluorescence apparatus having a doubly-curved x-ray optic for diffracting and focusing x-rays, wherein the x-ray source and the point of impingement upon the surface define an optic circle of radius R, and wherein the doubly-curved x-ray optic comprises a surface and a plurality of atomic plane of radius  $R_p$ , which intersect the surface at an angle  $\alpha$ ; and wherein the radius of the atomic planes  $R_p$  of the doubly-curved optic is defined by the equation  $R_p = 2R \cos \alpha$ , in order to detect x-ray fluorescence that is emitted by foreign matter that is present on a surface, as set forth in the claimed combination.

7. Regarding claim 51-56 and 58-63, the claims are allowable because the prior art fails to teach or to reasonably suggest a total reflection fluorescence apparatus and the steps of utilizing

the total reflection fluorescence apparatus to detect foreign matter utilizing a doubly curved x-ray optic for diffracting and focusing x-rays, wherein the doubly curved x-ray optic has a backing plate, an adhesive layer, and an optical layer having a desired curvature and thickness, as set forth in the claimed combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

8. The applicants have canceled claims 2,7, 19, 20, 23, and 25-40.
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wittry (USPN 6,498,830 B2) discloses a method and apparatus for fabricating a doubly curved crystal for the diffraction of x-rays in spectrometer, monochromators, or point-focusing instrument.

Chen (USPN 6,317,483 B2) discloses a doubly curved optical device having multiple reflection planes separated by a spacing (d), which varies in at least one direction.

Chen (USPN 6,285,506 B1) discloses a method for fabricating an optically curved element and an optically curved element wherein the optically curved element includes a backing plate, an adhesive layer, and a flexible layer having a desired curvature and thickness.

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Wittry (USPN 6,236,710 B1) discloses a curved crystal optical device for the diffraction of x-rays in spectrometers or instruments for microanalysis and the method of fabricating the curved crystal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Therese Barber whose telephone number is (703) 306-0205. The examiner can normally be reached on Monday to Friday from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (703) 308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

*tbcB*  
30 November 2003



DAVID V. BRUCE  
PRIMARY EXAMINER